STUDY ON PENILE CARCINOMA

A STUDY OF 29 CASES

DISSERTATION SUBMITTED FOR THE DEGREE OF

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BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled **"STUDY ON PENILE CARCINOMA"** is a bonafide record work done by **Dr. P. VELMURUGAN** under my direct supervision and guidance, submitted to the Tamil Nadu Dr. M.G.R. Medical University in partial fulfillment of University regulation for M.S. General Surgery, Branch I.

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DECLARATION

I **Dr. P. VELMURUGAN** solemnly declare that the dissertation titled **"STUDY ON PENILE CARCINOMA"** has been prepared by me. I also declare that this bonafide work or a part of this work was not submitted by me or any other for any award, degree, diploma to any other University board either in India or abroad.

This is submitted to The Tamilnadu Dr. M. G. R. Medical University, Chennai in partial fulfillment of the rules and regulation for the award of M.S.(General Surgery) Branch – I to be held in March 2008.

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CONTENTS

AIMS OF THE STUDY

1. To study about various predisposing factors for the development of Carcinoma Penis.
2. To compare the merits and demerits of various modalities of treatment.
3. To evaluate the guidelines for the future management of Carcinoma of Penis.

INTRODUCTION

Penis is the male external genital organ designed to serve the purpose of reproduction and excretion of urine during the act of micturition as provided by nature. With the harmonial play in the male by testosterone, the penis provides a symbol of manliness, which also contributes to the Mental, Psychological and Social integrity of an individual.

As a matter of fact, penis is liable to be affected by various lesions like inflammatory, infective, traumatic and neoplastic both benign and malignant. Majority of the lesions are preventable and statistical evidence shows predominance of lesion in the illiterate and low socio-economic group. Any lesion that affects the penis has great depths of affection on mental, psychological and social integrity of the individual.

This study is about 29 malignant lesions of penis treated in Government Rajaji Hospital, Madurai, during the period 2005-2007.

MATERIALS & METHODS

This dissertation is based on a random study of 29 cases of Carcinoma of Penis admitted in Govt. Rajaji Hospital, Madurai, from 2005-2007 . An analysis is made on Incidence, Predisposing factors, Symptomatology, Clinical features and Management.

REVIEW OF LITERATURE

Incidence

Carcinoma – Penis shows wide racial and geographical variation in its incidence. In general, it accounts for 1.25 percent of all malignant tumours of the male. While this tumour is rare in affluent countries, it is not uncommon in Asia, Africa and Latin America.

The incidence of carcinoma penis in different countries, as reported in the published literature, is as follows: The values represent the number of cases of penile carcinoma expressed as percentage of the total number of all types of cancer in the male. Burma 24.2; Ceylon 13.7; China 24.5; Great Britain 2.0; Israel 0.0; Kenya 1.0; Philippines 0.6; Taiwan 3.5; Uganda 7.2; United States 2.0; India : Assam 3.9; Bombay 2.8; Guntur 27.1: (of all epitheliomas); Lucknow 18.0.

Age Incidence

Studies from different countries show marked difference in age incidence. Peak incidence is seen between 45 and 55 years in Afro-Asian countries. It may occur in the young and even in children.

Racial and religious factors

Racial or generic difference in susceptibility to Carcinoma Penis may be existing, but there is no method of distinguishing them from environmental factors and the ritual of circumcision. So far, no identifiable racial predisposition is encountered.

The most important difference in the people of the world which concerns penile carcinoma is the ritual circumcision. Thus the people of the world can be divided into two groups:

a. those practicing routine circumcision ; and
b. those not practicing routine circumcision.

a. *Groups practicing circumcision* – in the communities, Penile carcinoma does not occur or is very rare.

   - Jews – Carcinoma Penis does not occur in Jews. So far only 5 cases of penile carcinoma are reported amongst the Jews. In Jews, circumcision is done in early infancy.

- Muslims- It is very rare in Muslims. In this religious groups, circumcision is done between 3 and 14 years and less completely, thus conferring lesser protection than in Jews.

b. *Groups not practicing circumcision.*

- Hindus – In India, whatever cases of penile carcinoma are reported, most of them are among Hindus.
- Christians- It occurs in uncircumcised Christians.

Anatomy of Penis

Penis is a cylindrical organ with a triangular shape in cross section. Penis has posterior fixed part called “Root” and anterior mobile part called “Body”. It is made up of three fibro muscular cylinders, which are filled with spongy erectile tissue enclosed. (Two corpora cavernosa and one corpus spongiosum).

At the root of penis, the corpus spongiosum expands to form the bulb of the penis. The bulb is pierced by urethra, which traverse through its entire length to open on to the external urethral meatus at glans. At the root of penis, the corpora cavernosa transform into crura, which are firmly attached to the ischiopubic rami. The corpus spongiosum is continuous distally as the glans. The three corpora are

firmly attached to perineal membrane – the tunica albuginea. Fibrous sheaths of corpora are fused together. Between the corpora cavenosa, the fibrous tissue forms a ‘septum-pectiniforms’ with vertical strands like a comb. The fused fibrous sheaths are attached to the under surface of the symphysis pubis by a triangular sheet of fibrous tissue called the suspensory ligament.

The three corpora fused together are loosely surrounded by the fascia-‘Buck’s fascia’,a cylindrical prolongation of the fascia of colles. Beneath this fascia, deep dorsal vein in midline, with a dorsal artery on each side and the dorsal nerve laterally. The skin is hairless and prolonged forwards in a fold, the prepuce, which invests the corona and glans. Beneath the skin, the superficial dorsal vein lies, accompanied by the lymphatics from the skin and anterior part of urethra.

Penile musculature

The bulb and each crus of penis are provided with a penile muscle. **Ischio-cavernosus**: Arises from the posterior part of the perineal membrane and from the ramus of the ischium. The fibres spiral forwards over the crus and are inserted in to upper surface of the

commencement of the corpus cavernosum. It aids in the support of the erectile organ.**Bulbospongiosus:**Arises from the perineal body and median raphe. The fibres are inserted into perineal membrane and dorsal fibrous expansion of penis, thus engulfing whole penis. In addition, there is a transverse perineosuperficialis, arising from ischial ramus and inserted into perineal body. The muscles are supplied by the perineal branch of Pudental Nerve($S_{2,3}$).

Blood supply to the root of penis reaches the bulb via the arteries to the bulb, and the crura via deep artery of the penis. The artery to the bulb supplies the corpus spongiosum and the glans, the deep artery supplies the corpus cavernosum and the dorsal artery supplies the skin, fascia and glans. The venous return from the corpora is partly by the way of veins accompanying the arteries and join the internal pudendal vein but mostly by deep dorsal vein which pierces the suspensory ligament and reaches the prostatic venous plexus. The superficial dorsal vein drains the dorsal skin of penis and fossa navicularis and reaches superficial external pudental and saphenous veins.

Lymphatic Drainage:

The penile urethra drains to the inguinal nodes, both superficial and deep. The lymph vessels from the glans penis run directly to the Node of Cloquet in the femoral canal.

Aetiology

The exact cause of carcinoma –Penis is not known. But it occurs only in men who have poor standard of personal hygiene in general and penile hygiene in particular, evidenced by the following observation:

1. This tumours occurs in the uncircumcised, does not in those men who had neonatal circumcision (Jews), and rarely occurs in those who had prepubertal circumcision (Muslims). Circumcision helps in the maintenance of cleanliness of the prepucial sac.
2. Phimosis prevents proper cleaning of the prepucial sac. The relationship of carcinoma penis to phimosis was noted as early as in 1814 by Hay and Roux. The incidence of phimosis amongst patients of penile carcinoma may be as high as 12-85 percent. Further, most of the authors point that the true incidence of phimosis may be even higher, as in many cases, informations

about the state of the prepuce is not available, since it is destroyed by the tumour when the patient presents.

3. Carcinoma- Penis commonly occurs in persons who are poor of low intelligence, coming rural communities, who neglected treatment for phimosis and lack of personal hygiene – results in chronic retention of smegma, dirt and infection , which leads to carcinogensis in course of time.

Role of Smegma

Smegma is a cheesy material rich in cholesterol, acid phosphatase, fructose and mucin, but not urea, suggesting a contribution from seminal vesicles, Cowper's glands or the gland of litter, but not urine. It is retained in the prepucial sac and contains many bacteria, but the significant one is "Mycobacterium Smegmatis". Though many studies have suggested that smegma may be responsible for carcinogenesis, the evidence is controversial. However, clinical observation support the theory that smegma may contain a specific carcinogen which may be produced by the bacterial action, especially due to Mycobacterium smegmatis.

Some periods of exposure to smegma before circumcision may account for the decreased effectiveness of prepubertal circumcision and the negligible effect of adult circumcision; perhaps the neonatal glans exposed at circumcision may acquire a protective layer of cutaneous cornifaction, that does not appear after delayed circumcision.

Role of Circumcision

Circumcision has a definite role in the prevention of carcinoma penis.

The preventive role of circumcision may not be merely hygienic because it results in automatic cleaning of the prepucial sac. It may by due to removal of a substantial part of the carcinoma – prone skin in which carcinoma may otherwise develop, the prepuce being one of the commonest sites of onset of the lesion.

Onuigbo reported 4 cases of penile carcinoma in 15, 000 surgical specimens collected over the period of 13 years from Ibos or Igbos ethnic group of Nigeria who practice circumcision, like the Jews. Only one tumour arose on the glans. From these observations, he classified carcinoma – penis into two types.

1. Smegma (dirt) induced squamous cell carcinoma which usually occurs on the glans (within the prepucial sac) and is preventable by circumcision.
2. Ordinary squamous cell carcinoma which can develop by chance on the penis as it can occur anywhere on the body. It can occur at any site on the penis and is not preventable by circumcision.

Role of Viruses:

There is some circumstantial evidence to indicate that viruses may be involved in penile carcinogenesis.

1. Penile warts, which are caused by *human papilloma virus* (HPV), have been reported to be pre-malignant by many authors.
2. Zachow et ano- demonstrated the presence of human papilloma virus in several types of ano–genital tumours- Bowenoid Papulosis, carcinoma in situ and verrucous carcinoma.
3. Bleomycin , which is an anti-deoxyribonucleic acid, anti-viral drug, exhibits a specific action against carcinoma- penis.
4. Thomas reported round thick – walled particles, 103 -187 mu in size with central electron density, morphologically similar to

herpes simplex virus, in 2 of 3 cases of squamous cell carcinoma while examining them under electron microscope. The presence of these particles within the neoplastic cell cytoplasm with cytoplasmic budding suggests an active viral infection. It is not yet clear whether it is the cause of the cancerous process or coincidental finding.

The incidence of epidermoid carcinoma of cervix uteri among the wives of men with carcinoma –penis is eight times higher than among the wives of the control group. Cocks et al reported married couple in whom carcinoma –penis and carcinoma –cervix occurred concurrently. Hence, speculation continues about common etiology for carcinoma –penis and carcinoma –cervix. Cocks et al suggested that human papilloma virus may be involved in the pathogenesis both the diseases.

A**ssociated Venereal Diseases**

The veneral disease once thought finding to be causal in penile cancer are more likely *a coincidental or " fellow traveler*" than a cause of penile carcinoma.

Precancerous lesions

Carcinoma –penis may sometimes be preceded by some precancerous lesion. Hoppmann & Farely classified Bowen's disease and erythroplasia of queyrat as 'tumour like' lesions, along with leukoplakia, balanititis xerotica obliterans, Buschke-Lowenstein tumour and anogenital paget's disease. Further, a carcinoma may arise on a papilloma or wart.

PATHOLOGY

Site

The lesions commences as a small ulcer or nodule most commonly on the glans penis. Other sites of the lesion are prepuce and coronal sulcus. Not infrequently, contact lesions may grow simultaneously in the prepuce and on the glans. Rarely, it may arise from the shaft.

Gross types

Depending upon the gross appearance, the lesions may be of the following type.

i. An ulcer

ii. A papilliferous or proliferative lesion which looks like cauliflower growth.

iii. A nodular infiltrating lesion

Microscopic pathology

Carcinoma – penis is a squamous cell lesion demonstrating keratinization, epithelial pearl formation and with various degree of mitotic activity. This penetrates the basement membrane, and may show nerve invasion, blood vessel invasion and invasion of corpora, urethra and deep tissues.

As most of the tumours are infected, inflammatory exudates in the deep tissue simulate tumour infiltration. Severe chronic inflammatory changes are seen around the tumour cells consisting mostly of lymphocytes, macrophages and occasional polymorphonuclear neutrophils. Areas of necrosis may be seen inside the tumour.

Spread & metastasis

i) **Direct** The direct invasion by anatomical continuity into the neighbouring tissues pursues an inexorable course. The tumour invades the prepuce to tether it and makes the latter non-retractable; and later it destroys it. Buck's fascia acts as temporary barrier protecting the corporal bodies from invasion by the tumour. Penetration of Buck'sfacia and tunica albuginea permits quick spread; and the tumour may invade the scrotum, pubic region, perineum and groin. The entire penis may be destroyed by the tumour. Corpus spongiosum seems to be invaded last of all, and the bladder is rarely involved.

ii) **Lymphatics**

It represents the earliest route of dissemination. The lymphatic spread occurs by embolism to inguinal and to the iliac group & pelvic lymph nodes. A pre-pubic lymph node, when present, is commonly involved.

The lymphatic spread of cancer is present in about 80 per cent of cases of penile cancer,33 per cent of all cases have proved groin metastases. Pelvic lymph node involvement has been reported in 29-

25 per cent of patients. Direct spread to pelvic nodes passing the inguinal nodes can also occur. Rarely higher lymph nodes may be involved.

Thomas reported patient who developed a larger metastatic tumour in mediastinal lymph nodes which was removed by thoracotomy.

A flat and ulcerative tumour has a tendency to develop earlier nodal metastases as compared to a proliferative lesion. Similarly, lesions larger than 5cm in size and those extending to cover 75 percent of shaft are also associated with increased incidence of metastases. Further, there is a greater proportion of metastases in younger patients with undifferentiated tumours and in those with carcinoma of the glans.

The metastatic growth in the femoral region ultimately leads to skin necrosis, chronic infection and erosion into the femoral vessels leading to death from massive hemorrhage.

Some of the inguinal nodes may show reticulum cell hyperplasia, giant cell reaction and fibrosis. This reaction may impede spread of carcinomatous process, but it needs further evaluation.

iii. Haematogenous Blood – borne metastases are rare, since the patient dies earlier due to complications of local and lymphatic spread. If metastases occur, they usually occur late in the course of the disease after invasion of the corpora, or after the local lesion has been treated.

Metastases may occur to the lung, liver, bone or brain; and they are reported to occur in 1 to 10 percent of a large series. Reddy & Indira reported one more case of carcinoma penis who, apart from pulmonary metastasis, had multiple subcutaneous nodules. Distant metastases in the absence of nodal involvement are unusual.

iv. Implantation spread: ‘Kissing Ulcer’ in scrotum :

Histologic grading :

Although some pathologists, have classified penile carcinoma according to Broder’s four grades, the majority grade them into either well differentiated or poorly differentiated grades. Most of the penile cancers are well differentiated or low-grade; only 10 percent of the lesions are anaplastic. Bassett divided penile carcinomas into 3 grades. well differentiated (grade I), moderately differentiated (Grade II) and poorly differentiated (Grade III).

Frew et al described two patterns of tumour growth.

i) *"Solid" pattern* in which the tumour consists of relatively large rounded clumps and sheets of round cells.

ii) *"Cord" pattern* in which the tumour is composed of smaller cell masses, sometimes irregular in outline, and with intervening small clumps and slender cords of cells. This type of tumour metastasizes earlier.

CLINICAL FEATURES

The typical patient of carcinoma –penis is an elderly, uncircumcised, unintelligent and unwashed person coming from the lower strata of society. However, this tumour can also occur in the young, and other section of the society. The tumour may be present for a long time. In one of the series, 64 percent of patients reported within 6 months, and 78 percent within an year of onset. Many patients had phimosis and the tumour growing under the unretractable prepuce. The lesion may be overlooked until it reaches considerable size.

Symptoms

The first symptom of penile carcinoma is often a painless nodule, warty growth, vesicle or ulcer, pain, bleeding or offensive discharge may appear later. No other cancer emits such an offensive odour as penile carcinoma. That is why ancients called it a **'stinking disease'**. Constitutional symptoms are evident only after the development of metastasis; and there may be weakness, weight loss, fatigue and malaise. Other constitutional symptoms may be present depending upon the site of metastases.

Signs

(1) The prepuce is not retractable in many cases; and the tumour covered by the foreskin endows the penis with club shaped deformity.

(2) The prepuce may be destroyed by the tumour, or may have to be removed or slit opened to see the lesion.

(3) The lesion mainly of two types: proliferative (fungating) and ulcerative (infiltrative); but this division is vague as both ulceration and proliferation are usually seen in the same tumour. It is better to classify them as follows:

(a) Predominanatly *proliferative type*- It may appear as a small lump, a pimple, a warty growth, or a more luxuriant exophytic lesion resembling a cauliflower.

(b) Predominanatly *ulcerative type*- It presents as non- healing ulcer which may be shallow or deep by excavating. Later on the entire penis may be destroyed or 'auto-amputated'.

(4) The lesion will have everted edges, indurated base; and a variable amount of slough is present on its surface.

(5) Examination of the base of penis and scrotum is necessary to mark out the extension of the lesion. Per rectal and bi-digital examination give information regarding invasion of the perineal body.

(6). Retention of urine or a urinary fistula very rarely present.

Inguinal nodes: Between 35 and 78 percent of patients will have palpable inguinal nodes when first seen. Occasionally, the patient

presents with inguinal secondaries only, the primary being hidden due to phimosis,.

The palpable nodes may be due to secondary infection in the early stages, and later on due to metastasis. Marcil et al found less than half of the palpable nodes to contain tumour. Proved inguinal metastases at their first attendance, but this is probably the largest recorded proportion.

On the other hand, small metastatic nodal deposits may not be clinically palpable in obese persons. Many series have demonstrated that 20-40 percent of patients with clinically negative nodes have histologic metastatic involvement.

Course of disease

Bassett wrote: “Carcinoma – penis is chronic disease and after the onset of symptoms almost all the patients lived more than 2 years and nearly one-third lived more than 6 years.

This is a too optimistic statement: Penile carcinoma has a relentless progressive course, causing death in most of the untreated patients within 2 years. They may die from inanition, sepsis or haemorrhage

from erosion into the femoral vessels. Few patients die of distant metastases without extensive ilio – inguinal disease.

```Rarely, a patient of penile carcinoma with advanced local disease and regional node metastases may have a long survival. Spontaneous regression of penile carcinoma is not reported.5-15 percent of patients may develop second lesion.

**Differential diagnosis**

This will include sexually transmitted diseases (Such as chancre, chancroid, inguinal bubo, penile warts and other pre-cancerous conditions. Usually a biopsy will clinch the diagnosis.

**Clinical Staging**

Many methods of clinical staging of penile carcinoma are described, but the methods in common clinical use are :

Jackson's and UICC staging.
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Jackson's Staging :

Stage I - The tumour is confined to glans or prepuce.

Stage II - The shaft of the penis is involved.

Stage III - The lymph nodes are positive but operable.

Stage IV - The lymph nodes are fixed. The tumour involves perineum or scrotum;or distant metastases are present.

UICC Staging :

The TNM classification of penile carcinoma is considered most accurate.

T- ***Primary tumour***

Tis -Preinvasive carcinoma. (carcinoma in situ)

To -No evidence of primary tumour.

T1 -Tumour 2 cm or less in its largest dimension, strictly superficial or exophytic.

T2 - Tumour more than 2 cm but less than 5 cm in its largest dimension with minimal extension.

T3 -Tumour more than 5 cm in its largest dimension, or tumour with deep extension, including the urethra.

T 4 -Tumour infiltrating neighbouring structures.

N -***Regional lymph nodes***

N0 -No evidence of regional lymph node involvement.

N1 -Mobile unilateral nodes.

N2 -Mobile bilateral nodes.

N3 -Fixed nodes.

M ***-Metastasis***

M0 -No evidence of remote metastases.

M1 -Remote metastases present.

AJCC Staging for Penile Cancer

Primary tumour **(T)**

Tx	-	Primary tumour cannot be assessed.
T0	-	No evidence of primary tumour.
Tis	-	Carcinoma in situ.
Ta	-	Non invasive verrucuous carcinoma.
T1	-	Tumour invades subepithelial connective tissue.
T2	-	Tumour invades corpus spongiosum / cavernosum.
T3	-	Tumour invades urethra / prostrate.
T4	-	Tumour invades other adjacent structures.

Lymphnodes **(N)**

Nx	-	Regional nodes cannot be assessed.
No	-	No regional lymph node metastases.
N1	-	Metastases in single regional lymph node.
N2	-	Metastases in multiple or bilateral superficial inguinal nodes.
N3	-	Metastases in deep inguinal / pelvic lymph nodes unilateral or bilateral.

Distant metastasis **(M)**

Mx - Distant metastases can't be assessed.

M0 - No distant metastases.

M1 - Distant metastates present.

STAGING GROUP

Stage O	T is	N0	M0
Stage I	T1	N0	M0
Stage II	T1	N1	M0
	T2	N0	M0
	T2	N1	M0
Stage III	T1	N2	M0
	T2	N2	M0
	T3	N0	M0
	T3	N1	M0
	T3	N2	M0
Stage IV	T4	Any N	M0
	Any T	N3	M0
	Any T	Any N	M1

INVESTIGATIONS

Frequently, a dorsal slit or circumcision or both may be necessary to gain adequate exposure of the lesion for clinico - pathological examination.

Histo Pathology

a*) Primary tumour* –Biopsy of the lesion is mandatory before any treatment. It has no harmful effects. It should include enough tissue to determine the depth of invasion which decides the nature of treatment, and tells a bit about prognosis.

Biopsy with confirmation of the tumour from the frozen section, and immediate surgical excision constitute an alternative means of diagnosis and treatment.

Pre operatively, in the examination of the surgical specimens, evidence should be sought of involvement of the urethra and corpora cavernosa, as well as the perineural and vascular extension. Also, sections should be taken at the limits of excision in order to determine surgical adequacy.

b) ***Nodal involvement*** **-** Clinical examination of the lymphnodes has two types of fallacies.

i) The enlarged lymphnodes may not have metastases : Basset found 37 percent of clinically ‘malignant’ nodes histologically free of the tumour.

ii) The impalpable lymphnodes may have metastases in 20-33 percent of cases.

Lymphnode biopsy is indicated in the following cases :

i) Patients with high-grade lesions.

ii) Patients with highly invasive neoplasm involving the neighboring structure like urethra and scrotum.

iii) Patients with tumours larger than 5 cm.

iv) Tumours covering more than 75 percent of the shaft ; and

v) Node measuring more than 3 cm in diameter.

Methods of Biopsy :

i) Needle biopsy may give the necessary information.

ii) Fine needle aspiration cytology is also recommended. Needle biopsy is of value when it is positive; negative does not rule out uninvolvement.

iii) Sentinel node biopsy – The sentinel node, which is located superior and medial to the junction of Saphenous and femoral vein in the area of superficial epigastric vein, is usually the first site of metastases; if it does not contain carcinoma, there is little chance of others having it.

iv) Inguinal node exploration provides more accurate staging with minimal morbidity.

Radiography

i. Metastases in the lung and bone may be identified on plain radiography.

ii. Excretion pyelography is usually normal,unless there is a massive retroperitoneal adenopathy, which is rare.

iii. Lymphangiography – It may be of value in assessing the involvement of regional nodes by metastatic deposits by the presence of irregular filling defects. The role of inflammatory from metastatic changes may be quite difficult. The tissue – reaction produced by the oily dye may cause proliferative lymphangitis that could contribute to post-operative

lymphoedema of the legs. Further, the obturator and internal iliac nodes are not routinely visualized by pedal lymphangiography and therefore, cannot be assessed with reliability. The filling of external iliac nodes might be suboptimal owing to inflammatory or metastatic obstruction in the superficial and deep inguinal systems. The potential lymphangiogrphy would seem to lie in the identification of nodal abnormalities in the common iliac and periaortic requiring biopsy if abdominal exploration has to be undertaken to determine operability. Thus lymphangiography may be of benefit not in obviating a need for exploration of suspicious common iliac or periaortic nodes but in identifying abnormal nodes for initial palpation, excisions and histological examination by frozen section.

iv. Bone scan may be done for detection of secondaries.

v. CT scan of the iliac or aortic nodes may be performed to exclude metastases beyond the limits of dissection.

vi. Gallium 67 scan for inguinal nodes.

Laboratory Studies

i. The urine contains pus, red cells and bacteria, as it comes in contact with the lesion while coming out.

ii. Blood -Anaemia is usually present.

- Leukocytosis is commonly present.
- Hypo – albuminemia may be present.
- Azotaemia may occur due to urethral obstruction.
- Hypercalcaemia may be detected even in the absence of detectable osseous metastases.

iii. The tumour may be cultured so that appropriate antibiotic may be given.

DIAGNOSIS

The diagnosis is based on clinical findings and histopathological examination of the lesion. An uncircumcised middle aged or elderly person presenting with a non-healing ulcer of more than three weeks duration or a nodule or wart must have a biopsy to rule out carcinoma. The following are the minimal diagnostic criteria for penile carcinoma.

- ✓ **T = Primary tumour**
  - Clinical examination
  - Incisional / excisional biopsy of lesion
- ✓ **N = Regional lymph nodes.**
  - Clinical examination
  - CT-Scan – if palpable inguinal adenopathy
  - Superficial inguinal node dissection (indicated for high grade, vascular invasion , invasive histology)
  - Aspiration cytology (as indicated)
- ✓ **M = Distant metastases**
  - Clinical examination
  - Chest X-ray / USG abdomen & Pelvis
  - Biochemical determination (liver function, calcium)

- MRI, Bone scan (as indicated)

A large number of patients of carcinoma penis delay medical consultation, as indicated by the advanced condition of their disease when they present. A delay of more than one year has been reported by 15 to 50 percent of patients in various series.

The patients of carcinoma penis delay medical consultation more than those of any other malignancy. The reasons for delay are may – personal neglect, embarrassment, guilt, fear and ignorance; no reason appears justified, however, since penis is an organ handled and observed on daily basis. Poverty, and lack of intelligence and medical facilities are additional factors.

TREATMENT

There are three methods for treating penile carcinoma; surgery, radiotherapy and chemotherapy.

Surgical Treatment

Surgical treatment is the most reliable and widely practiced mode of treatment. Operation for penile carcinoma vary according to the extent of the growth and many other factors. A margin of 2 cm posterior to the proximal limit of the growth is expected to ensure freedom from local recurrence.

1) ***Circumcision***- Occasionally, when the growth is confined to the prepuce, it is possible to treat it by circumcision alone. A complete circumcision is required to have an adequate tumour – free margin. Circumcision alone, however, is frequently followed by recurrence.
2) ***Partial amputation*** – partial amputation of the penis with at the least 2 cm margin proximal to the tumour is indicated for the lesions involving the glans and distal shaft.

   The object of this procedure is to have a penile stump which is usually serviceable for upright micturtion and sexual function, but

without or a rare chance of local recurrence. Taking a frozen section of the resected margin is recommended for microscopic confirmation of tumour-free margin of resection.

However, if the stump is so short that the functions described above are not possible, or it is likely to retract into the scrotum, total amputation is preferred.

3). *Total amputation* – it means removal of the whole penis including its triradiate root. It is *indicated* when-

i) The tumour has involved the shaft.

ii) The penis is so short that the stump left after partial amputation would be buried in the scrotum, and will not be available for upright micturition and sexual function.

iii) There are radio – resistant and radio – recurrent growths and,

iv) Radio necrosis of penis occurs following radiation treatment

The modern operation of total amputation varies slightly from that originally described by Sir A. Pearce Gould (1882).

In this operation both the crura are detached from the margins of the pubic arch, and the urethra is divided 5 cms below its point of

emergence from perineal membrane. A urethrostomy is made in the perineum.

There are a few problems in the total amputation described above :

i). The operation is called “total” amputation, where as 5 cm of corpus spongiosum is left over.

ii). The scrotum hangs in front of the neo-urethrostoma resulting in its wetting with urine during each act of micturition. Consequently, the patient may develop ammoniacal dermatitis of the scrotum.

iii). Meatal stricture, when it occurs, is a difficult problem and must be prevented.

iv) During detachment of crura from the pubic arch the deep arteries may retract under the bone and cause troublesome haemorrhage.

4) *Subtotal Amputation*

The operation is done with a transverse racquet incision enclosing the base of the penis, and 4-5 cm wide strip of adjacent scrotal wall within the ellipse. After completion of the operation, when the wound is closed, prepubic advancement of the scrotum occurs there by avoiding problem.

The cura are divided after clamping a little away from the bone for better control on vessels.

Since the parts of crura and 5 cm of corpus spongiousum are left over, it is appropriate to call this operation as " sub-total " amputation.

A nipple of the urethra is made in the perineum by delivering the urethra through a hole in the skin after arising a tongue – shaped flap of the skin in the midline.

The distal half of the urethra is debulked, split on the side and everted to cover the proximal half of the urethra. The skin flap is fed into the split of everted urethra.

5)Emasculation

Many authors do a radical operation instead of a total amputation for carcinoma- penis invading the corpora. In this operation, apart from removing the whole penis including its triradiate root, the testis and scrotum are also removed. Four reasons are given for this procedure, namely-

i. When the penis is not there, no useful purpose is served by retaining the testis.

ii. The retained scrotum hangs down in front of the neo-urethrostoma and gets wet during each act of micturition.

iii. After subsequent ilioingunial node dissection, lymphoedema of scrotum frequently occurs.

iv. Castration removes sexual urge.

Many workers do not carry out castration as a routine for the following reasons;

i. Many patients like to retain at least some evidence of masculinity. In a radical operation after ‘radical’ excision of male genitlia, a “vulva” is reconstructed. It is not a too heavy punishment for the ‘guilt’ of having a penile carcinoma?

ii. In future, it may be possible to reconstruct a penis for those people also.

iii. The second problem can easily be overcome by prepubic advancement of the scrotum, as already described.

iv. There is no direct lymphatic drainage between the penis and scrotum or testis.

v. The scrotal skin may be useful for future urethroplasty if required.

However, a radical amputation may still be required where a penile tumour is invading into the scrotum.

6)<u>Ilio – inguinal node dissection</u> – Barney (1907) published the first report about bilateral ilioinguinal lymph node dissection. This is indicated if the nodes are positive for metastatic deposit. The nodal metatases can be treated by radiation therapy also, but surgery is more effective than radiotherapy.

Prophylactic node dissection – some authors do routine lymph node dissection even if the nodes are not palpable ; but as it has significant morbidity and mortality, and inguinal metastases are infrequent in such cases, prophylactic groin dissection is not justified. Therapeutic node dissection- Bilateral node dissection is indicated, if biopsy of the sentinel node of non suspicious node is positive, or if clinically suspicious nodes are present from the onset. Skinner et al employed lymphangiography to decide the extent of node dissection.

i) If lymphangiogram shows no involvement of the iliac nodes, bilateral inguinal and sub – inguinal node dissection is done.

ii) If lymphangiography or exploratory laparotomy reveals involvement of iliac nodes, radical excision of ilio-inguinal nodes is indicated.

The goal of ilio-inguinal node dissection is en-block excision of all of the lymphatic tissue from the aortic bifurcation to the point where the femoral artery enters the Hunter's canal. It involves bilateral removal of iliac, obturator, and inguinal nodes. Many authors recommend bilateral ilio inguinal node dissection in all the cases.

Complication

Ilio-inguinal node dissection has 3-10 percent mortality, and significant morbidity which may be seen more than 50 percent cases in many series. The complications include sloughing of the flaps, lymphorrhoea from the wound, seroma, wound infection and lymphoedema of the lower limb.

Frealey reported sloughing of the flaps in 60 percent of cases. It occurs due to ischaemia of the flaps. Intravenous fluorescein has been shown to be a reliable indicator of adequacy of blood supply of the dermal flaps.

Lymphoedema of the lower extremity is almost certain and may be worse than a recurrence of the tumour. Fraley reported it to occur in 40 percent of cases; and Pand and Nayak observed it to occur in 12 out of 42 cases. In a metastatic penile carcinoma, if overlying skin is involved, it is excised along with the nodes, and the defect may be covered with tensor fascia lata myo-cutaneous flap or medial transposition of sartorius muscle.

Ilio inguinal node dissection has been proved to be superior to inguinal dissection alone, because of removal of impalpable but involved iliac nodes. The disease free survival is increased, in spite of its complications.

URINATION AFTER PENECTOMY :

Surgical treatment of carcinoma-penis may disturb micturition in two ways.

1. After total and radical amputation, the patient has to micturate in sitting position like a woman, and this may cause severe psychic disability in many patient.

2. The patient may have dysuria due to meatal stenosis. Oalley described a patient of carcinoma – penis who, after total amputation of

penis, devised a funnel like stainless steel tube to help himself micturate in standing position.

To prevent urethral stenosis, many methods are described :

1. *Walker's method* – The urethra is brought down to the perineal wound, trimed and sutured to the skin.
2. *Flock & Culp method* – The distal end of the urethra is formed into flaps and sutured to skin edges.
3. *Badenoch's methods* - The distal end is slit to form lateral flaps which are stitched to the surface at a distance from the edges of the skin.
4. *Rob & Smith's method* - The sheath of corpus spongiosusm is fixed to the edges of the stab wound in the skin by sutures inserted at the base, and the urethra is left hanging free distal to the skin edges.
5. *Higgins Method* - The urethra is divided obliquely and sutured to the skin.
6. *Sawhney's method* - He slit opened the distal urethra antero – posteriorly for 0.5 cm and designed two triangular flaps on each

side from the perineum in and medial side of the thigh based posteriorly. The flaps were suture d in place draping the urethra, suturing the skin edges using 4/0 chromic catgut.

7. *The nipple urethrostomy* has already been described.

RADIOTHERAPY

The primary lesion in penile carcinoma can be cured or locally controlled by radiotherapy. A secondary tumour does not respond that well. However, both the primary and the secondary lesions are being treated by radiotherapy.

Advantages

i) Preservation of the penis, especially in young patients, is the main advantage.

ii) Avoidance of fear and pain of the operation.

Radiotherapy had higher morbidity as compared to surgery. Many of the complications of radiotherapy require a secondary penectomy. Then why not do a primary penectomy and avoid delay in the institution of definitive treatment.

The evaluation of the overall results is difficult because different methods of radiotherapy (time schedule of treatment, dose of radiation and type of delivery system, etc.) are used by different workers.

The carcinoma –penis is a grossly infected lesion. Infection reduces the effectiveness of radiotherapy increases the chances of radiation damage to penile tissue.

It may be difficult to differentiate between post radiation tissue changes and recurrence or persistence of the disease. It may result in repeated biopsies and three to six weeks delay in the institution of treatment.

The treatment – schedule is usually length except when iridum mould technique of Hope Stone is used.

Jackson reported that nodal metastases develop more frequently after or during the course of radiotherapy than after surgery. However, the final results with regard to eventual 5year survival are not significantly different.

The inguinal skin tolerate radiation poorly, resulting in skin maceration and ulceration.

The presence of infection reduces the effectiveness of radiation in the lymphnodes.

Similarly the perilymphatic fat, if present, reduces effectiveness.

Radiation therapy may result in lymphoedema.

Indications

An ideal patient for radiotherapy is a young individual with a small (2-3cm) non-invasive or very superficially invasive exophytic type of lesion of the prepuce, glans or coronal sulcus ; this type of lesion is likely to be cured.

Other indications include

i) Patients who refuses operation and

ii) a patient with advanced lesion or with distant metastases who want to retain his penis. In these cases palliative radiotherapy is given. Thus, any type of lesion, primary and /or secondary, can be treated by radiotherapy.

Choice of radiotherapy

Primary tumour

In situ carcinoma – Radium mould is the treatment of choice. In exceptional cases, where the lesion is limited, superficial irradiation can be used.

Small superficial lesion-Low energy radiation of contact therapy using a mould is method of choice.

Secondary tumour

Radiotherapy is not effective as it is to primary. But as the tumour can recur even after a thorough block dissection. Murrell &Williams prefer radiotherapy as the treatment of choice for inguinal nodes. One can control the diseases by mega-voltage irradiation and if necessary, with interstitial radiotherapy of residual tumour. If the nodes are mobile and operable, node dissection is the treatment of choice. But if they are inoperable, or surgery is refused, or the patient is a poor risk, radiotherapy is indicated.

Post – Operative Therapy

If the surgical excision has been localized, the method of irradiation is the same as if surgery has not been done. After amputation , when the tumour is found at the edges of the specimen, external irradiation with megavoltage is indicated.

Palliative Radiotherapy

It is indicated in advanced cases with completed destruction of penis with local spread and / or large ulcerated fixed nodes in the groin or when there are distant metastases. With megavoltage radiation, 3,000-4,000 rads in 2-3 weeks are given to reduce or heal the ulceration or reduce the tumour sizes. Occasionally, a large doses of radiation is well tolerated and may result in significant palliation.

Complications

There are many complications of radiotherapy. They include pain, oedema of the legs, meatal stenosis, penile necrosis, urethral fistula, telangiectasis, testicular damage and neoplasia and stricture urethra.

Results

Many workers have reported varying after radiation treatment. Bloedorn has given the following figures.

Almost 100 percent cure rate is obtained in early lesions which are less than 2 cm in diameter. If the lesion is large but still limited to the distal end of the organ, the cure rate is 75-80 percent. The overall cure rate of all the patients treated by radiotherapy is 65 percent.

Chemotherapy

Chemotherapy is the weakest weapon in the treatment of carcinoma of penis. Because of the relative rarity of penile carcinoma, experience with their chemotherapeutic managements limited.

Topical 5 Fluoro uracil is useful is superficial and pre-cancerous lesions.

Bleomycin

Bleomycin is an anti-viral antibiotic produced by streptomycin strain. It is a water soluble basic polypeptide which chelates copper. It consists of some 13 fractions which have to be separated by chromatography. Its affinity to squamous tissue explains its apparently

selective effectiveness on squamous tumour while its affinity for pulmonary tissue contributes to its toxicity. Bleomycin has proved both a valuable adjunct to surgery in patients with histologic metastases in resected ilio inguinal nodes, and an effective means of palliation in conjunction with radiotherapy as 0.1 percent ointment. Ichikawa et reported excellent response in 6 previously untreated patients. Trial therapy in Uganda has induced complete or partial regression in the vast majority of patients. Even regression and elimination of documented metastases have been reported. The toxicity of bleomycin includes changes in the finger–nails and skin, and pneumonitis followed by fibrosis. These changes are reversible on stoppage of the drug. It causes negligible hepatic and haematologic dysfunction.

Other Drugs

Methotrexate IV has been used with success. Remission occurred in 4 of 9 patients treated with 0.5 – 1.5 g/kg IV, or 250 mg/m2 in an hour infusion, with citrovorum factor repeated 24 hours later. Kato et al reported a patient of penile carcinoma aged 73 years with metastases to inguinal nodes treated with 1 mg/kg of Mitomycin. Cisplatinum has been used with good success.

Combination Chemotherapy

Experience with combination chemotherapy is limited. Bleomycin provides a potent addition to combination chemotherapy regimens. A combination of vincristine with bleomycin has been tried.

VBM regime : (8-12 wks course)

Vincristine : 1 mg iv day 1

Bleomycin : 15 mg im 6 & 12hrs after vincristine

Methotrexate : 30 mg po-day-3

PF regime (4 courses at intervals of 3 wks)

Cisplatin : 100 mg/m2 iv day 1

5 Fluoro uracil : 1 mg / m2 iv day 1, continuous infusion

MPB Regime (every 28 days for 2-4 cycles)

Methotrexate : 200 mg/m2 iv days-1, 15, 22

with Leucovorin: 25 mg/PO to given every 6 hrs for 12 doses beginning day 2

Cisplatin : 20 mg / m2 iv days 2-6

Bleomycin : 10 mg / m2 iv days 2-6 / continuous infusion

PMB regime (every 21 days for 4-6 cycles)

Cisplatin : 100 mg / m2 iv day – 1

Methotrexate: 25 mg/m2 iv bolus - days 1& 8

Bleomycin :10 mg/m2 iv bolus – days 1 & 8

Adjuvant Chemotherapy

Bleomycin has been used as an adjuvant to surgery and radiotherapy, bleomycin and radiotherapy are reported to have synergistic effects and an be used to reduce the dose of either agent and hereby the toxicity. In patient with carcinoma penis, the results of bleomycin and irradiation therapy compared favourably with surgical treatment with respect to tumour recurrence. It has the great advantage of preserving the sexual function in most cases. Lymph node dissection is only indicated if there is evidence of metastases and should therefore be supplemented by irradiation. Aspiration biopsy of suspected node is a useful diagnostic procedure in such cases.

Other Physical Methods

Electrocoagulation has been used for treating proliferative and residual or recurrent lesions with satisfactory results. Hyperthermia may be used as an adjuvant to radiotherapy or chemotherapy.

STAGE -I

1. The primary tumour is treated by partial amputation (initial therapy of choice in North America), or radiation (initial therapy of choice in European countries). As the results of partial amputation and irradiation therapy are nearly the same, the patient prefer radiotherapy. Prophylactic node dissection is not indicated.

2. Periodic check up is done by the doctor and the patient himself (self examination), as it is anticipated that atleast 20 percent of the patients of stage I will develop inguinal metastases within 2-3 year period following initial therapy. If unilateral adenopathy appears, radical illio-inguinal node dissection is done on both sides.

STAGE II

1. The primary is treated by total amputation or radio therapy
2. The regional lymphnodes are re-evaluated after 2-6 weeks.

If lymphadenopathy persists, metastases are expected in 50 percent of patients. Simultaneous bilateral radical illio-inguinal node dissection is indicated in all cases whether the lymphadenopathy is unilateral or bilateral.

STAGE III

1. Palliative radiotherapy and / or chemotherapy.
2. In selected patients, radical hemipelvectomy hemi corporectomy provides a surgical option.

STAGE IV

The treatment is palliative chemotherapy / radiotherapy.

Sexual Aspects

The penis is the male organ of sex ; Penile carcinoma and its treatment significantly affect sexual activity. Sexual intercourse is not purely a penile act, carcinoma – penis not only disturbs the sex –act at the penile level but also disturbs the psyche of the patient. All these factors disturb the sexual activity significantly. Frew et al observed that only a few patients were having regular sexual intercourse when the disease was diagnosed. Only 4 of 116 patients had regular intercourse before operation. When an early small lesion is treated by radiotherapy, the sexual function is reported to be preserved.

After partial amputation, many authors have reported satisfactory sexual function which depended upon the length of the residual stump.

It is reported that, with 4-6 cm of corpus cavernosum remaining after partial amputation, 45 percent of the patients could have sexual intercourse, and it was 25% of those with 2-4 cm of penis remaining. However Frew et al reported that of the 16 patients of partial amputation who were having regular sexual intercourse after operation of partial amputation who were having sexual intercourse after operation did not succeed in having sexual intercourse after operations,

although 2 had occasional erection. Further, out of 23 survivors of partial amputation in Frew et al series, only one could produce four children after operation. Sexual intercourse is not possible after total amputation ; it may become possible if an new penis is reconstructed.

Psychological Aspects

Carcinoma – penis is lesion which threatens (1) the life of the victim as it is a 'cancer' and (2) the penis itself due to surgical treatment. Hence, it produces significant psychological reactions. Goel et al studied this as facts in 34 selected patients of penile carcinoma and described it in detail. The psychological reaction to penis cancer merely starts with the onset of the disease as the patient is often ignorant or negligent. It commonly appears in the subsequent course of the diseases. The reaction depends upon many factors.

1. The patient's character type.
2. The age of the patient – the younger the patient, more severe is the reaction. In elderly patient's the chief problem is connected with death, where as in younger ones it is a mixture of many problems connected with life and sexuality.
3. The socio-economic status of the patient.

4. The state of the disease, and the nature and severity of the treatment.

Most of the patients of penile carcinoma are of ‘careless’ type and are from lower strata of the society. The disease does not produce any reaction in most in the beginning, and they neglect their disease till its horrifying appearances and progressive nature produces anxiety. Many of these patients are mentally prepared for penectomy. Very few patients belonged to ‘careful character’ type. They have a severe anxiety reaction, which brings them immediately to a doctor. They get panicky on becoming aware of their disease and the possible result of treatment. The loss of penis constitutes a blow to the ideas of masculinity, and it is very difficult for him to face the prospect of losing an emotionally and fuctionally important organ.

Prognosis

As with any other malignant lesion, the prognosis is variable and depends upon the following factors.

1. Age of the patient – The tumour is likely to be more malignant in patients below 50 years of age.

2. Gross appearance – Ulcerative tumour are usually associated with poor five year survival.

3. The state of the diseases – If the lesion is limited to glans penis, 5 years survival vary from 70 to 90 percent after partial amputation. Lesions larger than 5 cm in size, and those extending to cover 7 percent of the shaft are associated with decreased survivals. However, the relationship of the lesion size or presence of metastases and decreased survival has been disputed. A patient having a highly invasive neoplasm involving the neighbouring structures like urethra and scrotum has a poor prognosis.

Inguinal nodes- Prognosis is markedly affected by the presence or absence of inguinal metastases. This factor affects the prognosis much more than any other factor. Cures of carcinoma – penis are seen in the patients in whom no cancer cells are found in the nodes. Permanent recoveries in cases of proved metastases are relatively few. Yardley reported a case of grade four anaplastic carcinoma of the penis with inguinal metastases treated by partial amputation with bilateral inguinal node dissection. 17 years after this, he came for treatment of benign hyperplasia of the prostate. Though he had mild lymphedema

of the legs he was free from carcinoma-penis. The overall 5 year survival rate in the presence of nodes with positive findings ranges from 20 to 28 percent ; among patient selected for inguinal lymph adenectomy, 5 year survival rate is 50 percent.

4. Histo-pathological findings – Most of the tumours are low grade and slowly growing. Staubitz et al found 10 percent of the lesions to be anaplastic. Many investigations have reported survival rates in patient with anaplastic lesions. However, a number of workers noted no correlation between the histological reading and survival. Frew et al advanced evidence for a more favorable prognosis when the pattern of growth was in clumps rather than in solid cords. E1 Dimiry et al reported similar observation. Polymorphonuclear eosinophils may be present in the cell infiltrate around the tumour in 45.2 per eosinophil tend to survive longer.

5. It is observed that penile carcinoma with phimosis and severe diffuse inflammation is associated with poorer prognosis. Also, the overall results depend upon the socio economic status of the patient. Further, if there is a recurrence after the primary treatment, the prognosis is less favorable.

Recurrence

A constant source of worry to all concerned in the treatment of any cancer is recurrence. It is true for carcinoma penis also. Even one cancer cell, if left over or escapes, may be enough for recurrence. There is no method known by which one can detect the left over or escaping cancer cells. A major problem in the treatment of primary tumour is local recurrence, which occurs approximately in 10 percent of patients. Simple circumcision, carried out for prepucial lesion, is frequently followed by recurrence. There may be recurrence at the sites of nodal metastases after treatment of the primary, secondary or both. A prepubic lymphnode is said to be responsible for recurrence at the base of dorsum of penis after amputation.

PREVENTION

Primary Prevention

Penile carcinoma is an almost totally preventable disease, provided special emphasis is given for better health education and prepucial hygiene, and if necessary circumcision is done in infancy. After circumcision, the penis is cleaned automatically by the direct contact and friction with the undergarment. Further, circumcision

removes a considerable portion of carcinoma prone skin. Hence compulsory circumcision at birth is recommended by many authors, and it is a routine practice in many hospitals in the west. The present neonatal circumcision rate is about 80 percent in USA and 40 percent in Canada. However, many authors are very critical of this routine practice as the prepuce provides a natural protective cover to the glans and external urethral meatus ; and it has an important role to play in the sex act. Circumcision is not a substitute for poor prepucial toilet which should be taught to every child.

Secondary Prevention

It aims at early diagnosis by self-examination.

i) If a lesion occurs on a circumcised penis, which is an external organ and is well suited for self examination, which is rare, it is easily visible as the glans is exposed.

ii) The penis is an external organ and is well suited for self examination which should be taught to every male by proper health education. A non-healing ulcer, nodule or wart on the penis warrants immediate medical consultation.

OBSERVATIONS IN MY STUDY

1. Age group : Among 29 patients, most of them were in the 4^{th} & 5^{th} decade.
2. Religion : Out of 29 patients Hindus – 28 / Christian – 1 / Muslims – 0, suggesting role of circumcision in the prevention of development of carcinoma penis and making uncommon among muslims.
3. Socio economic status : Out of 29 patients, 25 are from low socio economic status.
4. Pre malignant lesions : Out of 29 cases, 8 patients had evidence of pre malignant lesions mainly in the form of leukoplakia.
5. Associated systemic diseases : 11 patients are found to have associated diabetes mellitus.
6. Personal habits : 25 patients are smokers of more than 20 years duration.
7. STD association : All patients are subjected to HIV ELISA and VDRL testing. H/O exposure is seen in 5 patients.

8. Symptoms : Majority of them presented with ulcero proliferative growth, pain , inguinal adenopathy, foul smelling discharge, phimosis, bleeding, itching.

   - Warty growth - 2patients ,ulcerative - 4 patients , ulcero proliferative - 23 patients /
   - With inguinal nodes – 24 patients.
   - With phimosis – 13 patients (may be primary or secondary to growth)

9. Gross appearance : Ulcero proliferative - 23 patients / Ulcerative – 4 patients / warty growth – 2 patients.
10. Histopathology report – Well differentiated SCC- 26 patients, Moderately differentiated SCC – 2 patients, CIS – 1 patient.
11. FNAC of node : only 3 patients are positive for malignant cells.
12. Stages of presentation :

    - Stage I – 3 pts
    - Stage II – 13 pts
    - Stage III – 11 pts
    - Stage IV – 2 pts

13. Results of radiotherapy not included in my study.

14. Surgery done :

- Circumcision for – 1 patient.
- Partial amputation for – 9 patients.
- Total amputation+perineal urethrostomy+emasculation for– 11patients .
- Total amputation+perineal urethrostomy for – 1 patient.
- Totalamputation+perinealurethrostomy+emasculation+Block dissection for – 5 patients .
- Palliative amputation + Chemotherapy – 2 patients.

15. Follow up :

Out of 29 patients, 11 patients who underwent *Total amputation* followed upto 1 year, 4 pts came with recurrent nodal disease.

Out of 9 patients who underwent *partial amputation*, only 4 patients followed up with 1 patient presented with penile recurrence.

All 5 patients who underwent *Total amputation with Block dissection* are doing well with no evidence of recurrence.

16. Recurrence :

4 patients have nodal recurrence – 2 underwent interval block dissection, 2 were subjected to chemotherapy. 1 patient had a penile recurrence, underwent Total amputation + Block dissection.

17. Post operative complications :

Out of 17 patients, who underwent Total amputation and Perineal urethrostomy, 2 patients presented with urethral stricture, for which urethral dilatation is done at regular intervals.

Out of 5 patients, who underwent, block dissection, 2 had post operative wound discharge and flap necrosis – SSG done.

CONCLUSION

Carcinoma Penis has its peak incidence during 4^{th} & 5^{th} decades of life. Most of the patients were from low socio economic status. Smoking is associated risk factor. Most of them presented with phimosis either primary or secondary to growth. Sexually transmitted diseases are coincidental / Not causative.

Surgery is the main modality of treatment. Total Amputation + Perineal urethrostomy + Emasculation is the preferred mode of treatment. After a course of antibiotics, even if nodes are negative for FNAC, if nodes are persistent clinically, they should undergo bilateral block dissection – observed as a ideal treatment to prevent recurrence.

Carcinoma penis can be avoided by better penile hygiene and circumcision. It is a curable disease, if detected early and treated properly. Circumcision has a definite role in prevention of development of Carcinoma penis.

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PROFORMA

STUDY ON PENILE CARCINOMA

Case No. :

Name : Age : DOA :

Address : DOS :

Religion : DOD :

Socioeconomic Status :

H/o Presenting illness :

1. Ulcer / growth Site :
   Duration :
   Progress :
2. Inguinal Swelling :
3. Pain :
4. Micturition difficulties :
5. Foul smelling discharge :
6. Bleeding from ulcer / growth :
7. Inability to retraction of prepuce :

Past History :

Diabetes / Tuberculosis

Extramarital exposure

Premalignant lesions

Recurrent balanitis / balanoposthitis

Undergone circumcision

Farnity History :

Married / Unmarried

Children

H/o Ca Cx - Wife

Personal History

Smoker / Alcoholic

Clinical Examination :

Site of lesion

Type of ulcer / growth lesion

Extent of involvement (induration)

Bleeding

Foul smelling discharge

Urinary stream

Inguinal nodes – Unilateral / Bilateral

Mobile / fixed

Investigation :

1. HB %
2. TC DC ESR
3. Urine alb : Sugar : Dep :
4. VDRL
5. HIV ELISA
6. X ray chest PA view
7. USG abdomen & Pelvis
8. Biopsy
9. FNAC node
10. CT Scan – abd / pelvis / thigh

Stage of the disease :

Treatment given :

Surgery :

Radiotherapy :

Chemotherapy :

Follow up :

Post Operative biopsy report :

ABBREVIATIONS

PA	-	PARTIAL AMPUTATION
TA	-	TOTAL AMPUTATION
PU	-	PERINEAL URETHROSTOMY
E	-	EMASCULATION
BD	-	BLOCK DISSECTION
MD	-	MODERATELY DIFFERENTIATED
WD	-	WELL DIFFERENTIATED
CIS	-	CARCINOMA INSITU

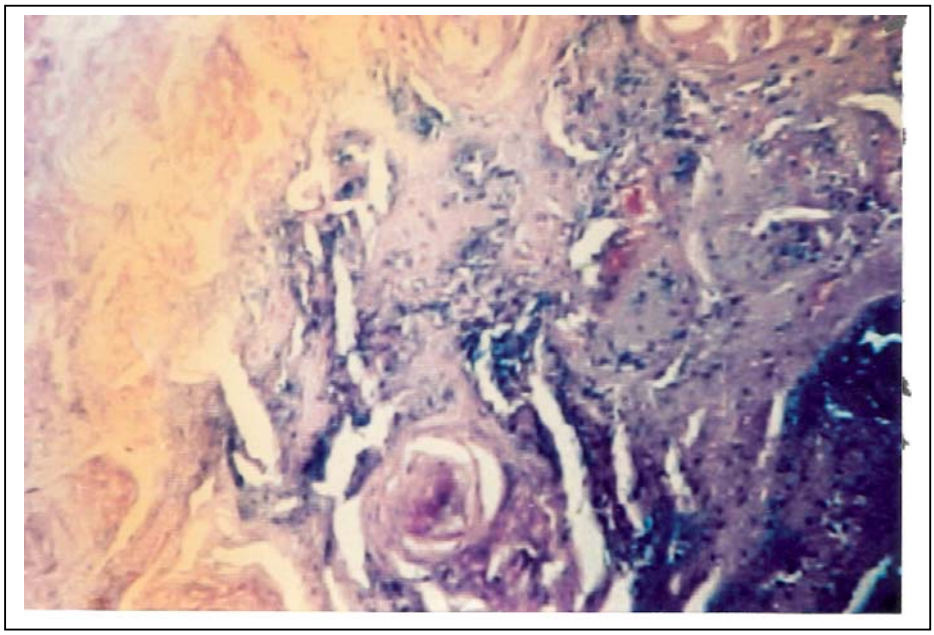
LEUKOPLAKIA

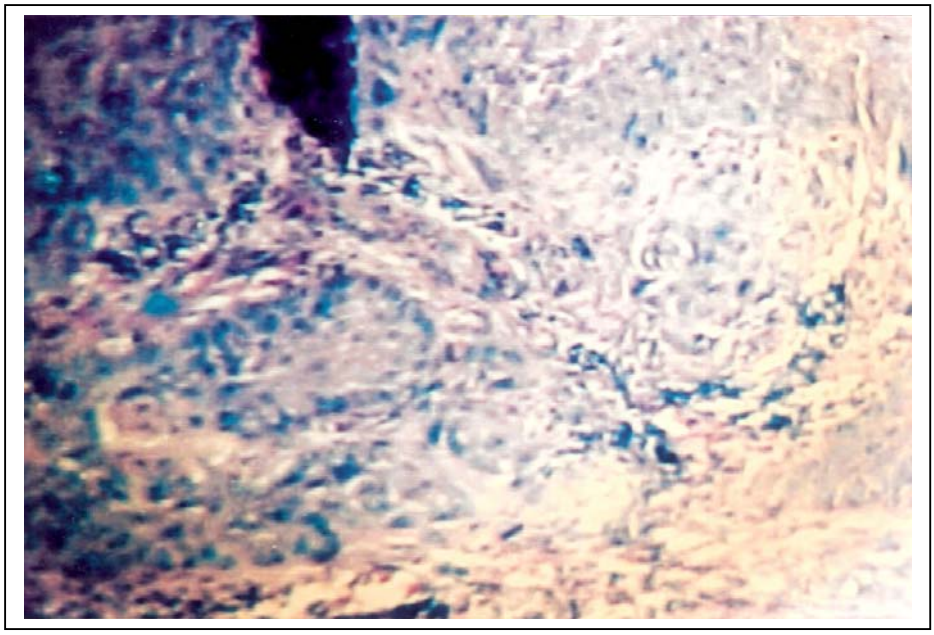
ULCERO PROLIFERATIVE LESION INVOLVING GLANS

ULCERATIVE LESION INVOLVING SHAFT

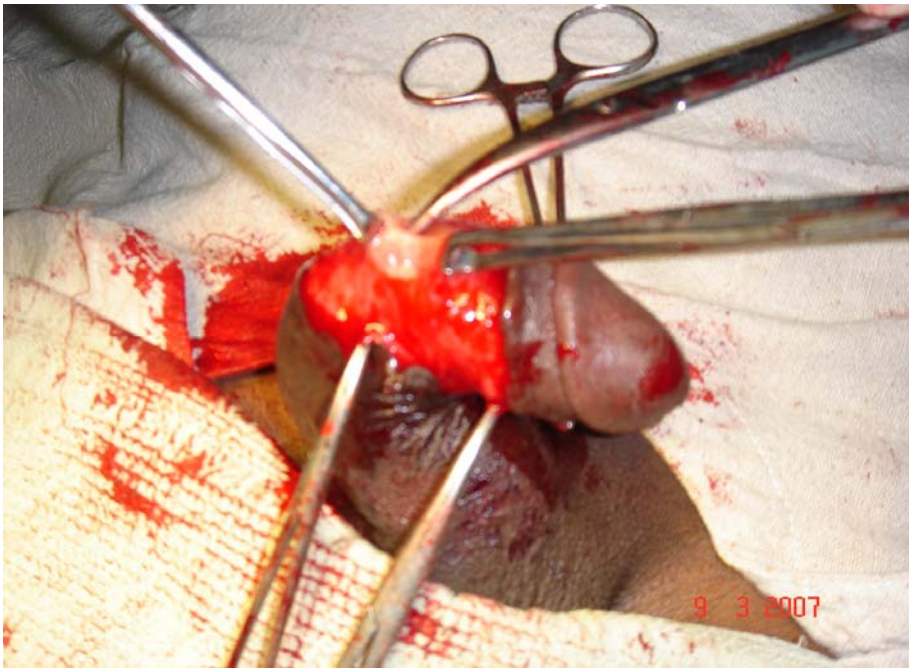
ULCERO PROLIFERATIVE LESIONS

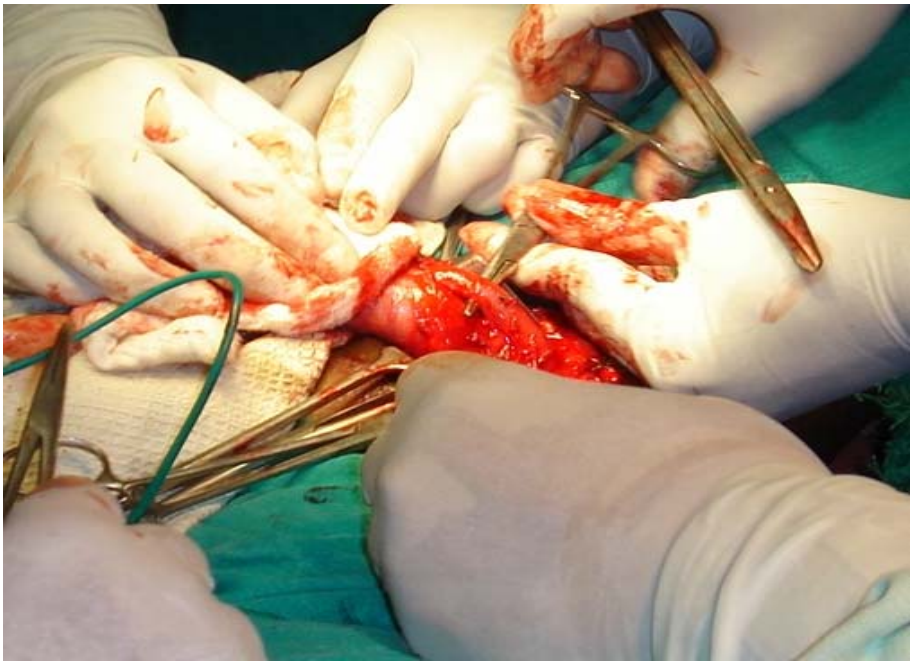
HISTOLOGICAL PICTURE WITH EPITHELIAL PEARLS

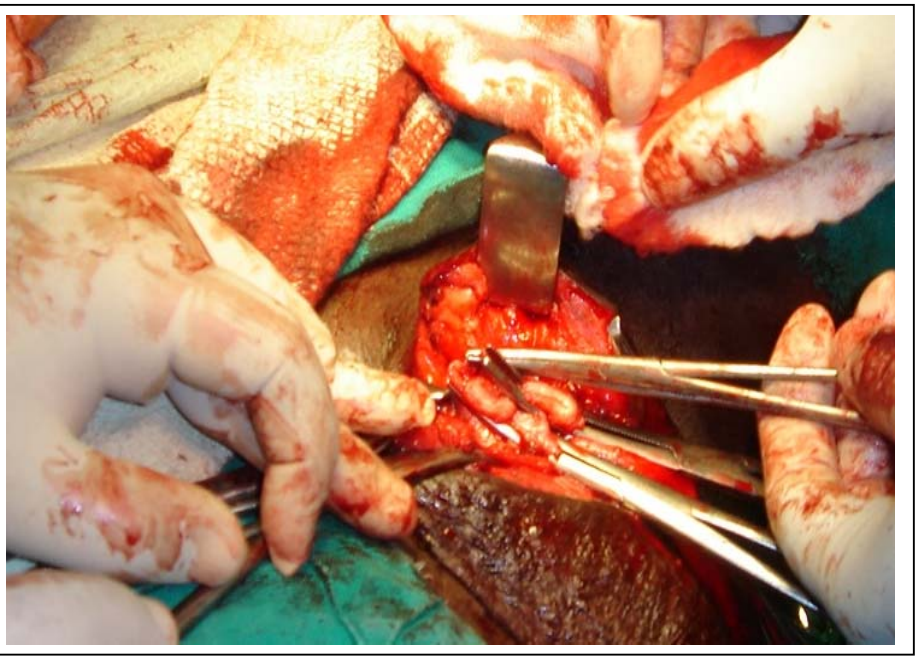




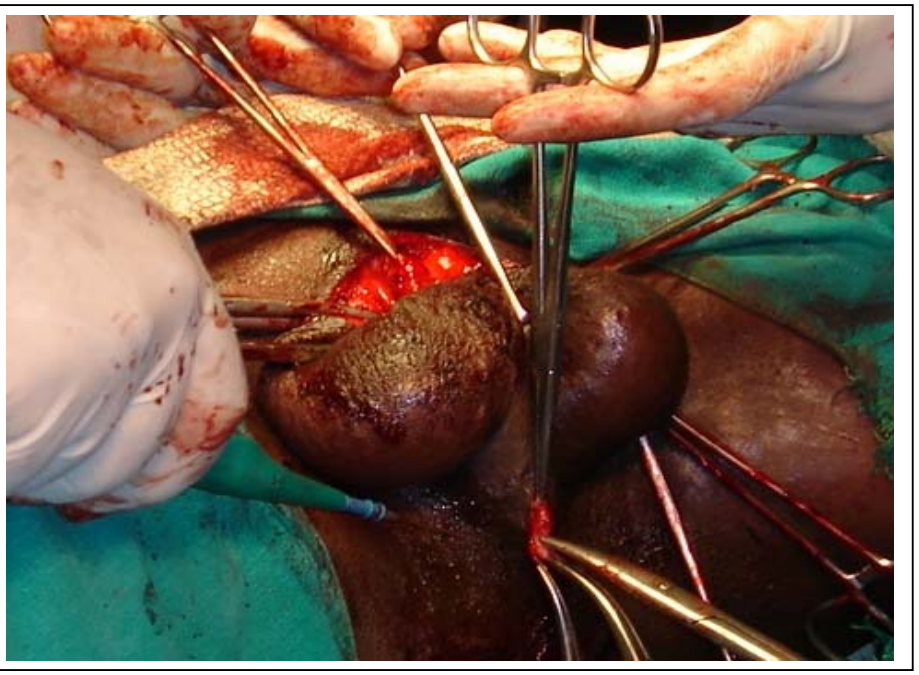
EXPOSURE OF CORPUS SPONGIOSUM







PERINEAL URETHROSTOMY

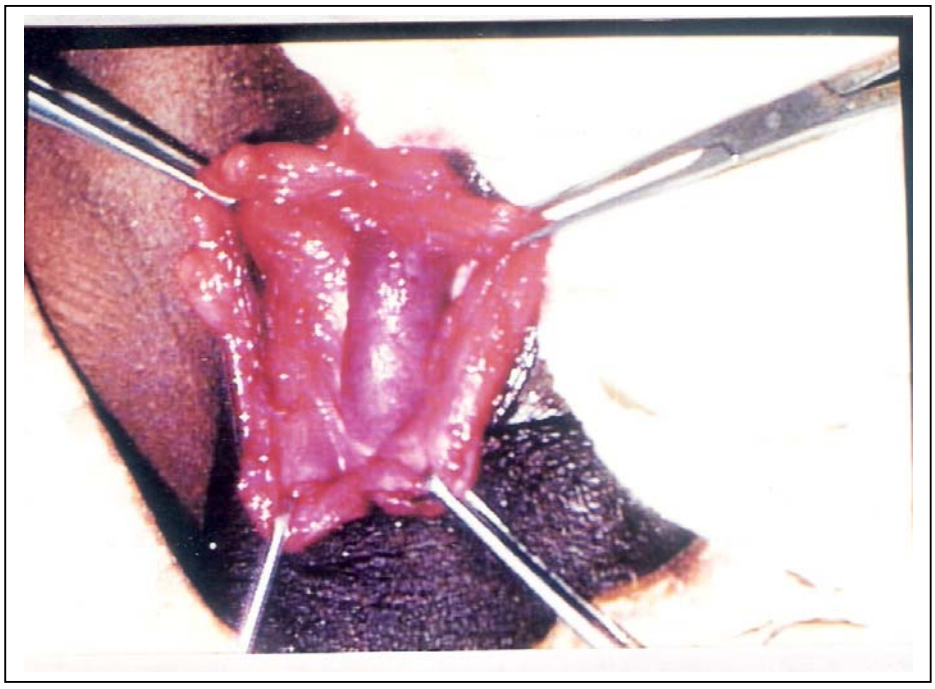


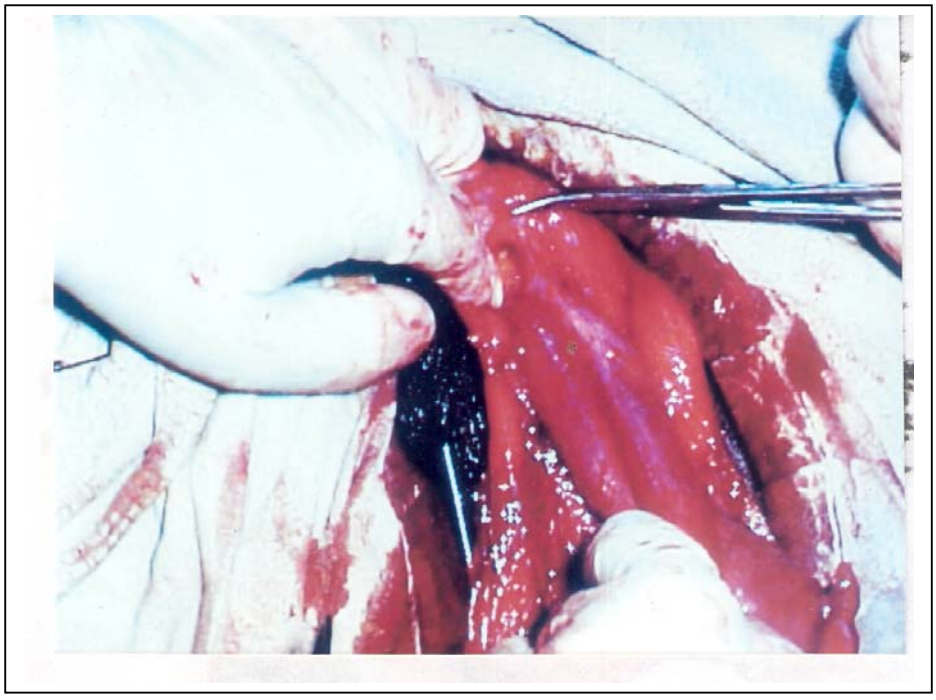
POST OPERATIVE PICTURE – ***TOTAL AMPUTATION / EMASCULATION / PERINEAL URETHROSTOMY***

POST OPERATIVE PICTURE – *TOTAL AMPUTATION WITH*

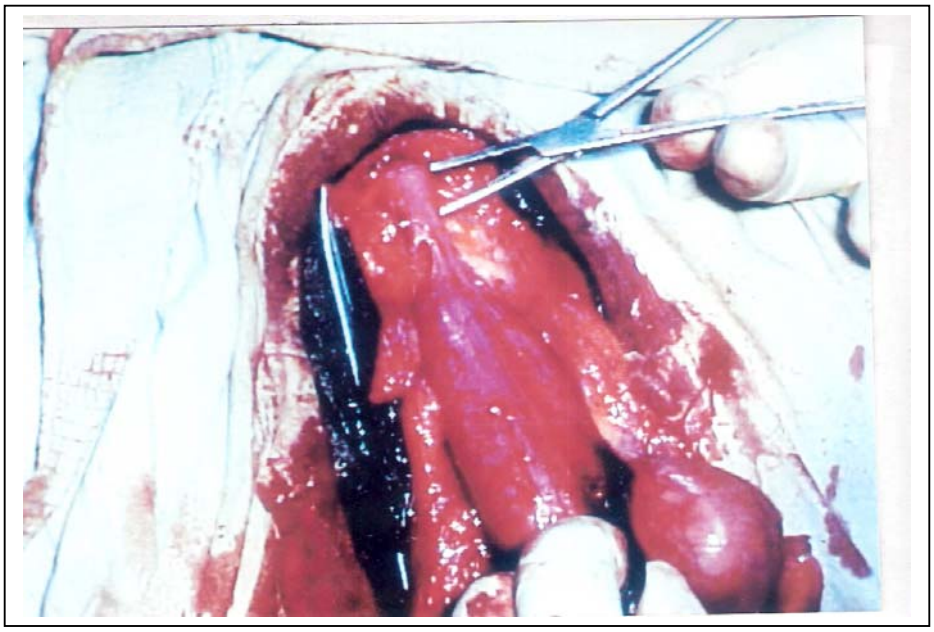
PERINEAL URETHROSTOMY / SCROTUM WITH TESTIS RETAINED

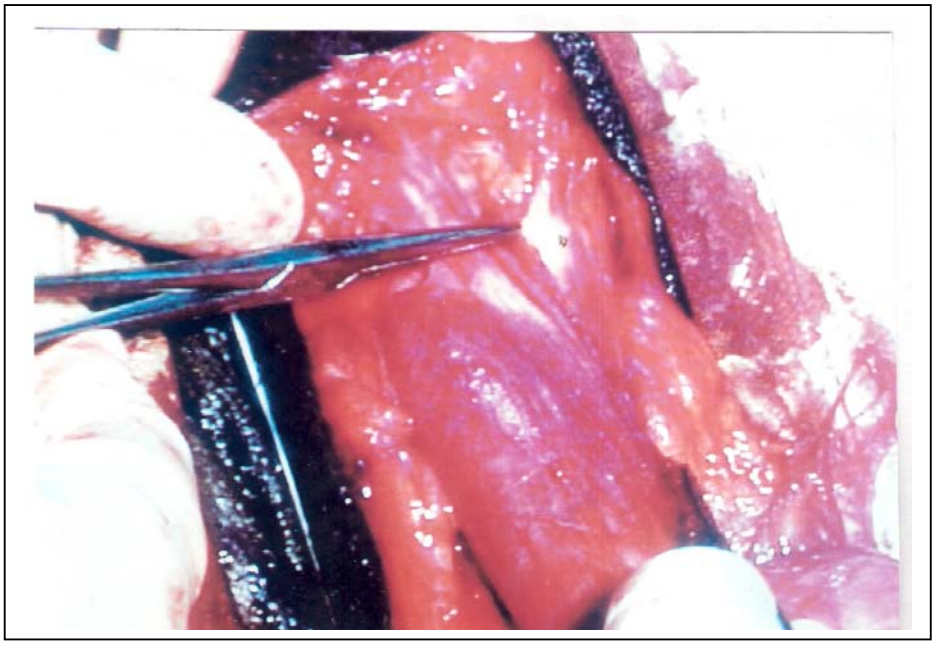
CORPUS SPONGIOSUM - EXPOSED



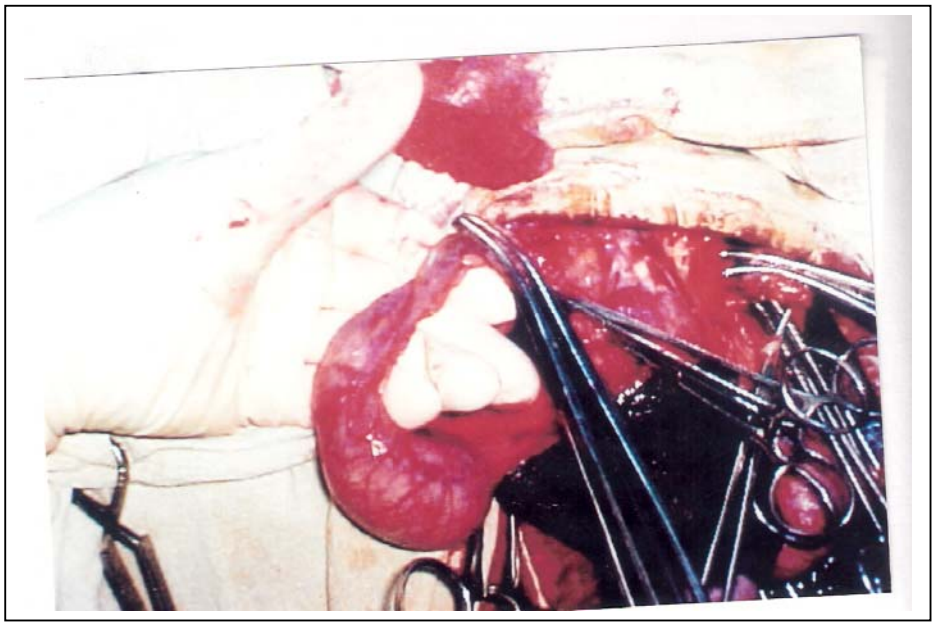


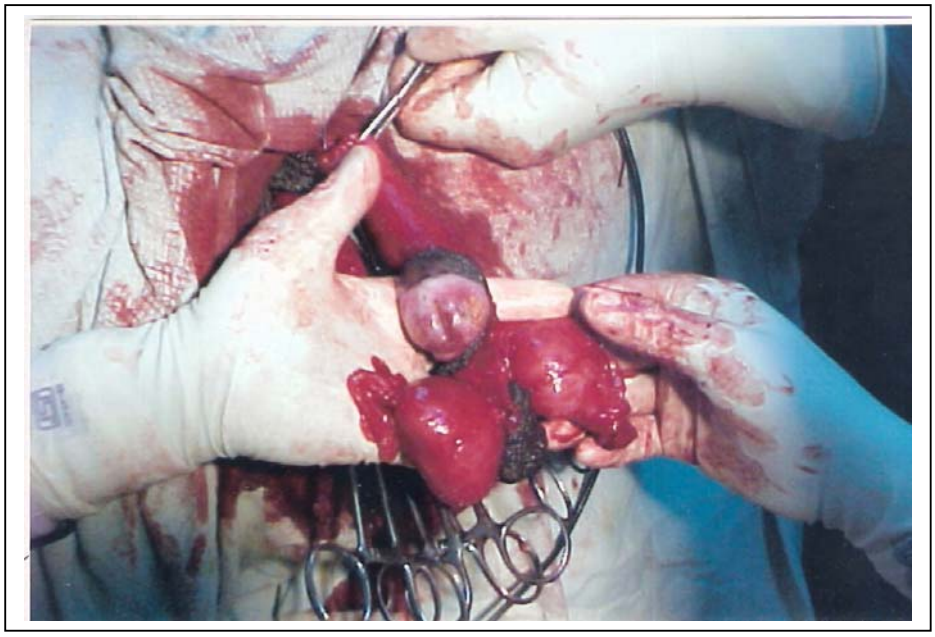
SUSPENSORY LIGAMENTS SHOWN



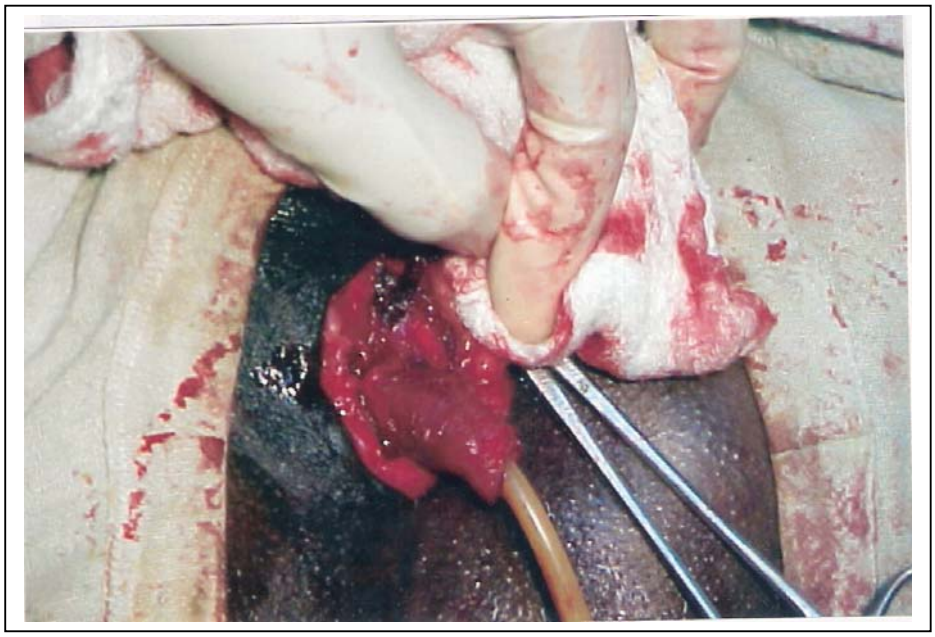


EMASCULATION SHOWN

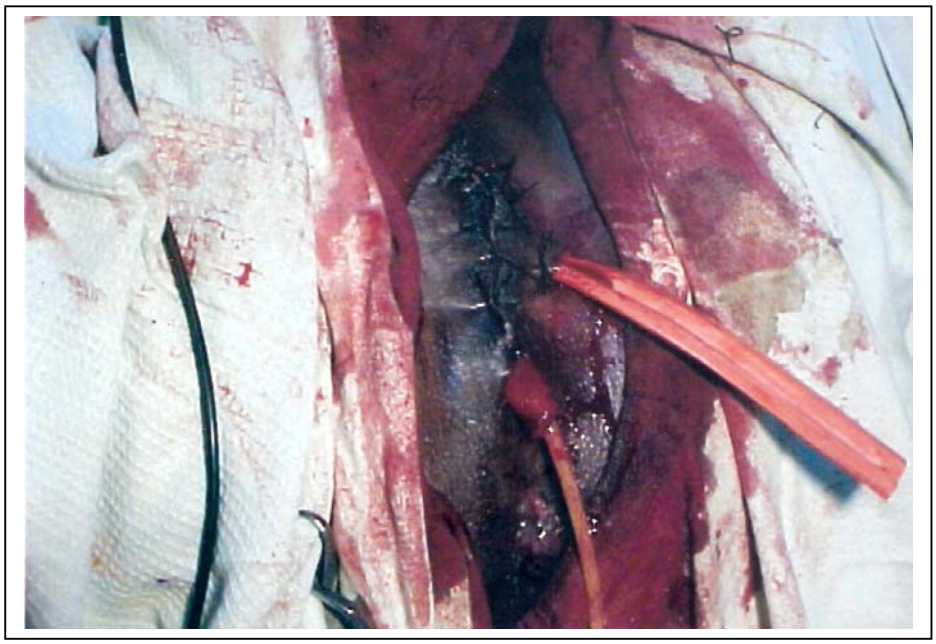




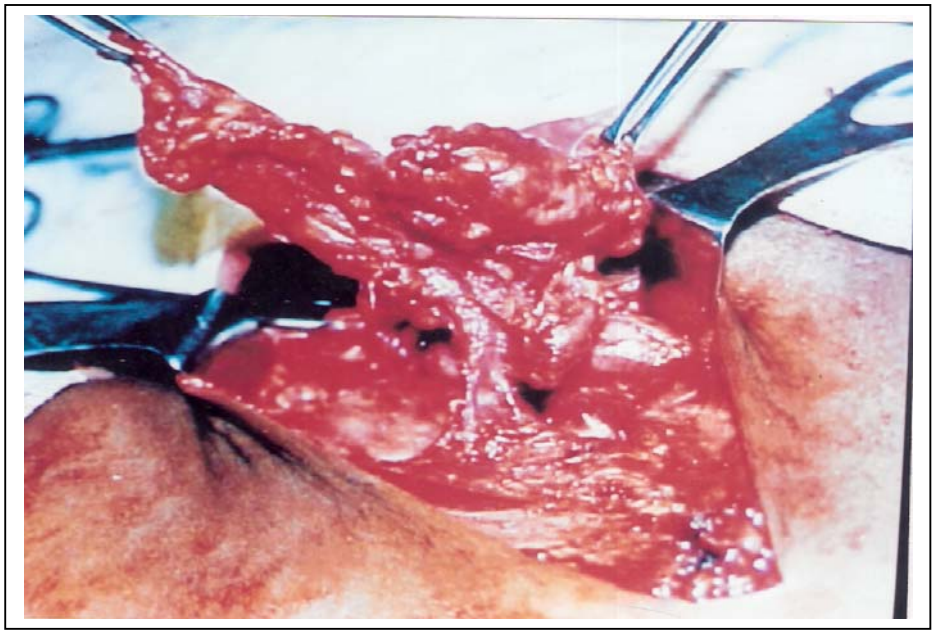
PERINEAL URETHROSTOMY

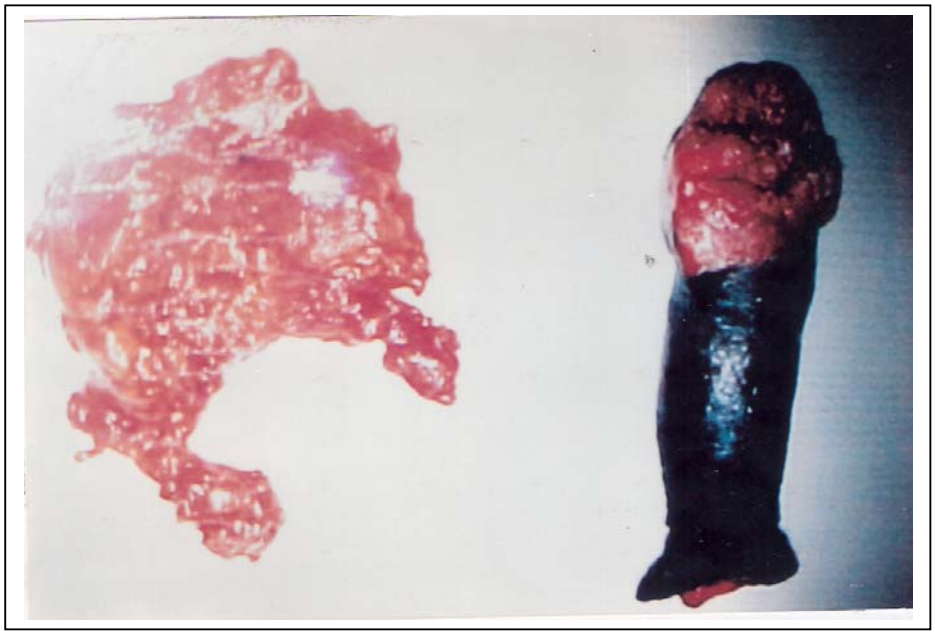


TOTAL AMPUTATION AND PERINEAL URETHROSTOMY + EMASCULATION DONE

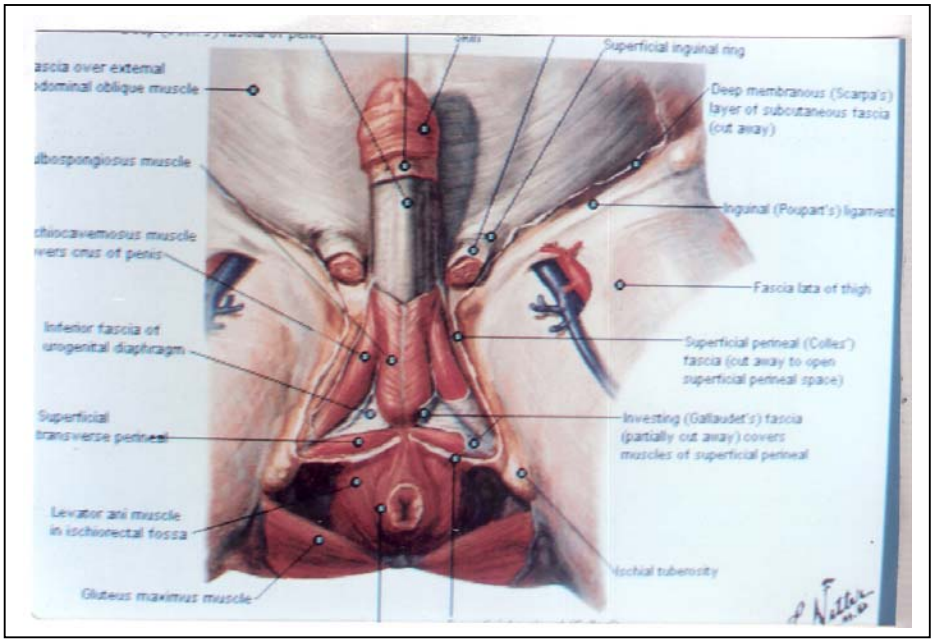


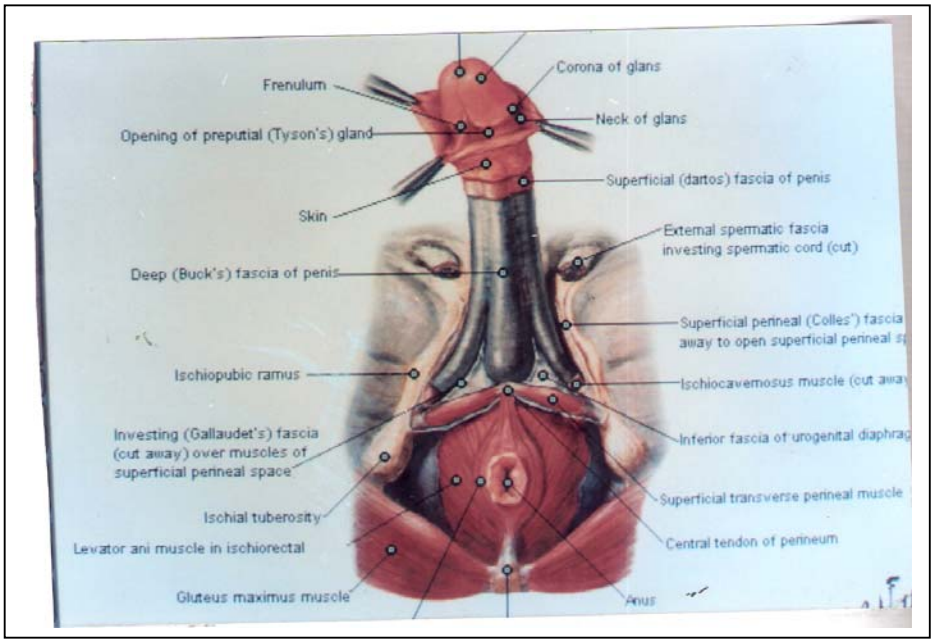
INGUINAL BLOCK DISSECTION



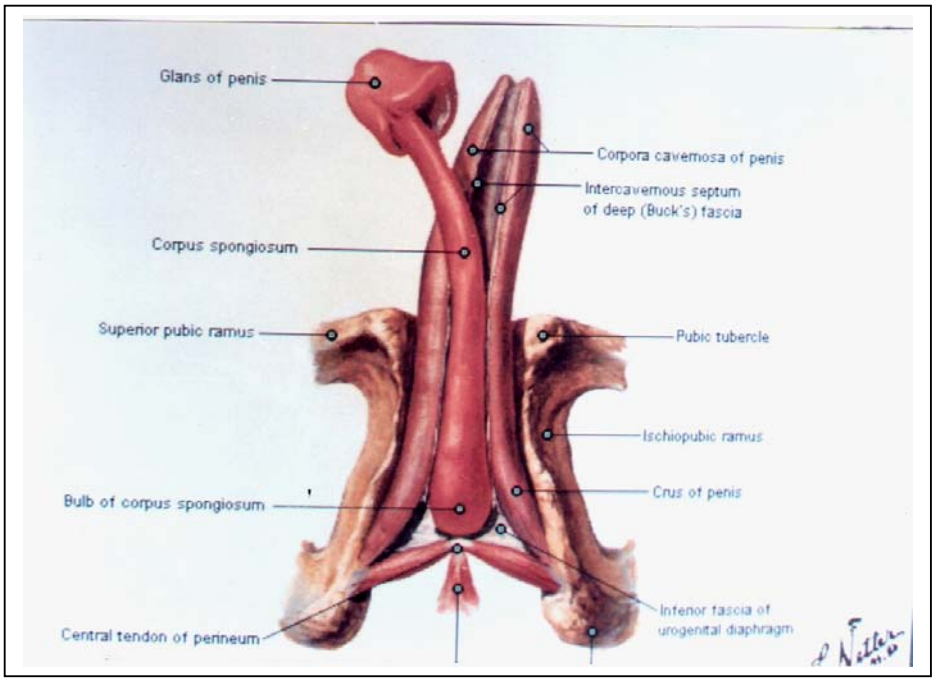


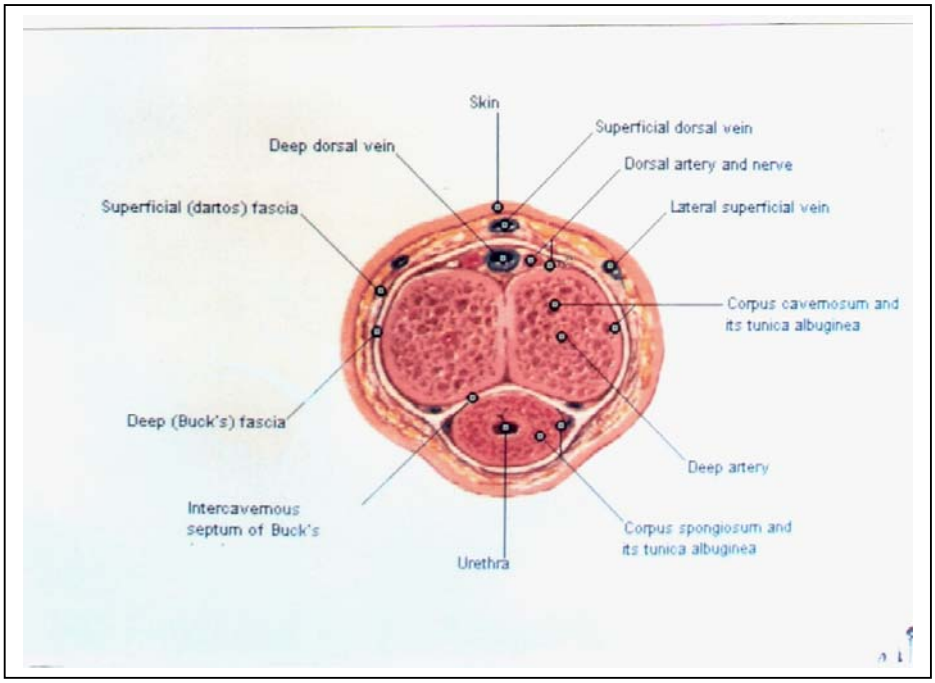
ANATOMY OF PENIS





ANATOMY OF PENIS





MASTER CHART													
S. No.	Name	Religion	Age	IP No.	Stage		FNAC	Biopsy	Surgery	RT	CT	Follow up	Recurrence
1	Ramakrishnan	Hindu	6 4	407408	$T_2 N_1 M_0$	II	-	Well Diff	TA+PU+E+Rt BD	-	-	2 yr	-
2	Chellasamy	Hindu	70	429314	$T_3 N_2 M_0$	III	-	Well Diff	TA+PU+E	-	-	2 yr	-
3	Rajendran	Hindu	58	439318	$T_2 N_1 M_0$	II	-	Well Diff	TA+PU+E	-	-	2 yr	+
4	Vellaisamy	Hindu	55	440852	$T_3 N_2 M_0$	III	-	Carcinoma in situ	TA+PU+E	-	-	2 yr	-
5	Balasubramani	Hindu	43	442136	$T_1 N_0 M_0$	I	-	Well Diff	PA	-	-	2 yr	-
6	Thangamani	Hindu	52	450375	$T_3 N_1 M_0$	III	-	Well Diff	TA+PU+E+B/L BD	-	-	2 yr	-
7	Kesavan	Hindu	60	453048	$T_3 N_2 M_0$	III	+	Well Diff	TA+PU+E+B/L BD	-	-	2 yr	-
8	Kandasamy	Hindu	61	459605	$T_3 N_2 M_0$	III	-	Well Diff	TA+PU+E	-	-	2 yr	-
9	Lourdusamy	christian	70	470844	$T_2 N_1 M_0$	II	+	Well Diff	TA+PU+E	-	-	2 yr	+
10	Ramasamy	Hindu	40	470912	$T_2 N_2 M_0$	III	+	Well Diff	TA+PU+E +B/L BD	-	-	2 yr	-
11	Gurusamy	Hindu	75	488297	$T_1 N_0 M_0$	I	-	Well Diff	PA	-	-	2 yr	-
12	Krishnan	Hindu	52	498671	$T_2 N_0 M_0$	II	-	Well Diff	PA	-	-	2 yr	-
13	Muniyandi	Hindu	40	4126	$T_3 N_1 M_0$	III	-	Well Diff	TA+PU+E	-	-	2 yr	-
14	Ramu	Hindu	65	4168	$T_2 N_1 M_0$	II	-	Well Diff	PA	-	-	1 ½ yr	+
15	Venkatchalam	Hindu	70	4929	$T_2 N_2 M_0$	III	-	Well Diff	TA+PU+E	-	-	1 ½ yr	-
16	Sundaram	Hindu	40	5123	$T_2 N_1 M_0$	II	-	Well Diff	TA+PU+E	-	-	1 ½ yr	-
17	Gandhi	Hindu	45	5503	$T_2 N_1 M_0$	II	-	Mode Diff	PA	-	-	1 ½ yr	-
18	Mayilsamy	Hindu	49	5682	$T_2 N_1 M_0$	II	-	Well Diff	TA+PU+E	-	-	1 ½ yr	+

19	Moorthy	Hindu	42	6783	$T_2 N_2 M_0$	III	-	Well Diff	TA+PU+E	-	-	1 ½ yr	-
20	Ramar	Hindu	51	7943	$T_2 N_2 M_0$	III	-	Well Diff	PA	-	-	1 ½ yr	-
21	Maharajan	Hindu	56	8128	$T_3 N_4 M_0$	IV	-	Well Diff	Palliative amputation	-	+	1 ½ yr	-
22	Ayyasamy	Hindu	42	10218	$T_2 N_1 M_0$	II	-	Well Diff	TA+PU+E+Lt BD	-	-	1 yr	+
23	Arumugam	Hindu	41	13453	$T_2 N_0 M_0$	II	-	Well Diff	PA	-	-	1 yr	-
24	Saravanan	Hindu	58	14470	$T_3 N_2 M_0$	III	-	Well Diff	TA+PU+E+ BL BD	-	-	1 yr	-
25	Thangaraj	Hindu	55	17615	$T_2 N_4 M_0$	IV	-	Well Diff	Palliative amputation	-	+	1 yr	-
26	Kannan	Hindu	50	19470	$T_2 N_1 M_0$	II	-	Well Diff	TA+PU+E	-	-	1 yr	-
27	Babu	Hindu	51	21230	$T_2 N_1 M_0$	II	-	Well Diff	PA	-	-	8 m	-
28	Chandran	Hindu	48	45756	$T_2 N_1 M_0$	II	-	Mode Diff	PA	-	-	6 m	-
29	Muthu	Hindu	47	38921	$T_1 N_0 M_0$	I	-	Well Diff	Circumcision	-	-	3 m	-

MASTER CHART

S. No	Name	S.E. Status		Predisposing factors			Type of Growth	Pain	Inguinal adenopathy	Bleeding	Dis charge	Mic turition symptoms
		Rural	Urban	Phimosis	Leuko plakia	Others						
1	Ramakrishnan	+	-	-	+	-	Ulcerative	+	UL / mobile	+	-	-
2	Chellasamy	+	-	-	-	-	Ulcero proliferative	+	BL / mobile	+	+	-
3	Rajendran	-	+	+	+	-	Ulcero proliferative	+	UL / mobile	+	-	-
4	Vellaisamy	+	-	+	-	-	Ulcero proliferative	+	BL / mobile	+	+	-
5	Balasubramani	+	-	-	-	-	Ulcerative	-	-	-	-	-
6	Thangamani	+	-	+	-	-	Ulcero proliferative	+	UL / mobile	+	+	-
7	Kesavan	+	-	+	-	-	Ulcero proliferative	+	BL / mobile	+	+	-
8	Kandasamy	+	-	+	-	-	Ulcero proliferative	+	BL / mobile	+	+	-
9	Lourdusamy	-	+	-	-	-	Ulcero proliferative	+	UL / mobile	+	+	-
10	Ramasamy	+	-	+	+	-	Ulcero proliferative	+	BL / mobile	-	+	-
11	Gurusamy	+	-	+	-	-	Warty	+	-	-	-	-
12	Krishnan	+	-	-	-	-	Ulcero proliferative	+	-	+	+	-
13	Muniyandi	+	-	+	+	-	Ulcero proliferative	+	UL / mobile	-	+	-
14	Ramu	+	-	-	-	-	Ulcerative	+	BL / mobile	+	+	-
15	Venkatchalam	+	-	-	-	-	Ulcero proliferative	-	BL / mobile	+	+	-
16	Sundaram	-	+	-	-	-	Ulcero proliferative	-	UL / mobile	+	+	-
17	Gandhi	+	-	+	+	-	Ulcero proliferative	+	UL / mobile	+	+	-
18	Mayilsamy	+	-	-	-	-	Ulcero proliferative	+	UL / mobile	+	+	-

19	Moorthy	+	-	-	-	-	Ulcero proliferative	-	BL / mobile	+	+	-
20	Ramar	+	-	-	-	-	Ulcero proliferative	-	UL / mobile	+	+	-
21	Maharajan	+	-	+	+	-	Ulcero proliferative	+	BL / fixed	+	+	-
22	Ayyasamy	+	-	-	+	-	Ulcero proliferative	+	UL / mobile	+	+	-
23	Arumugam	+	-	-	-	-	Ulcero proliferative	+	-	+	+	-
24	Saravanan	-	+	+	-	-	Ulcero proliferative	+	BL / fixed	+	+	-
25	Thangaraj	+	-	-	+	-	Ulcero proliferative	+	BL / mobile	+	+	-
26	Kannan	+	-	+	-	-	Ulcero proliferative	-	UL / mobile	+	+	-
27	Babu	+	-	-	-	-	Ulcerative	+	UL / mobile	-	-	-
28	Chandran	+	-	+	-	-	Ulcero proliferative	+	UL / mobile	+	+	-
29	Muthu	+	-	-	-	-	Warty	-	UL / mobile	-	-	-